Alcohol Advertising: What Are the Effects?

Does alcohol advertising increase the overall level of alcohol consumption? Does it predispose children and adolescents to drinking? Although these and other related questions have been raised by public health advocates and echoed in public opinion surveys, the evidence from research to date is mixed and far from conclusive. In general, studies based on economic analyses suggest that advertising does not increase overall consumption, but instead may encourage people to switch beverage brands or types. At the same time, research based on survey data indicates that children who like alcohol advertisements intend to drink more frequently as adults. While these findings might offer some grounds for both reassurance and concern, the limitations of the research methods that have been used hinder the ability to draw firm conclusions about cause and effect in either case.

In recent years, public health advocates have called for strict regulation or elimination of alcohol advertising (Mosher 1994), and community-level action has focused on reducing local alcohol advertising (Woodruff 1996). Particular attention has been devoted to how alcohol advertising might affect young people (Atkin 1993) and to the targeting of minority communities (Abramson 1992; Alaniz and Wilkes 1995; Scott et al. 1992). A poll of public attitudes found that 57 percent of the public support prohibiting alcoholic beverage advertisements on television, 64 percent support advertising to counteract alcohol advertisements, and 41 percent support prohibiting sports sponsorship by the alcohol industry (Kaskutas 1993).

As described in this section, researchers have examined the effects of alcohol advertising through four main types of studies: experimental research in controlled settings; econometric analyses, which apply economic research techniques; surveys; and intervention studies of "media literacy" programs that encourage skepticism about advertisements. In general, experimental studies based in laboratory settings provide little consistent evidence that alcohol advertising influences people's drinking behaviors or beliefs about alcohol and its effects (Kohn and Smart 1984; Kohn et al. 1984; Lipsitz 1993; Slater et al. 1997; Sobell et al. 1986). In addition, econometric studies of market data have produced mixed results, with most showing no significant relationship between advertising and overall consumption levels (Fisher and Cook 1995; Gius 1996; Goel and Morey 1995; Nelson and Moran 1995).

Survey research of children and adolescents, however, provides some evidence of links between alcohol advertising and greater intentions to drink, favorable beliefs about alcohol, and a greater likelihood of drinking (Austin and Meili 1994; Austin and Nach-Ferguson 1995; Grube 1995; Grube and Wallack 1994; Wyllie et al. 1998*a*,*b*). Still, the survey study designs employed thus far have not been able to establish whether, for example, the advertisements caused the beliefs and behaviors, or whether preexisting beliefs and behaviors led to an increased awareness of the advertisements. Media literacy training may increase the ability of children and adolescents to offer counterarguments to messages in alcohol advertisements (Austin and Johnson 1997*a*,*b*; Slater et al. 1996*a*), but studies have not yet measured whether these effects persist beyond a short term.

The following is a review of the evidence, from each of these research areas, about the effects of alcohol advertising on alcohol consumption, alcohol-related problems, and drinking-related beliefs and attitudes. Studies have been drawn from such diverse fields as drug and alcohol studies, communications, psychology, sociology, marketing and advertising, and economics.

Background: The Frequency and Content of Advertising Messages

Concerns about alcohol advertising stem at least in part from its pervasiveness. The alcohol industry spent $1.03 billion on alcohol advertising in 1996, with the expenditures concentrated on television commercials and beer advertising (Besen 1997). Thus alcohol advertising, especially for beer, appears relatively frequently on television. Moreover, this advertising tends to appear most often during sports programming. While about one alcohol commercial appears in every 4 hours of prime-time fictional programming, one appears for every 25 minutes of programming for major professional sports (football, baseball, and basketball) and one for every 50 minutes of college sports programming (Grube 1993, 1995; Madden and Grube 1994). Overall, alcohol commercials make up 1.5 percent of all advertisements on prime-time television and 7.0 percent of all advertisements in sports programming.

Standard commercials, however, are not the only way in which alcohol is marketed on television. Alcohol advertisers use other types of promotions embedded in sports programming to place their product names, slogans, and symbols before the television viewing audience. Stadium signs, brief sponsorships (such as "This half-time report is brought to you by…"), and on-site promotions (such as product symbols and names on race cars) are broadcast to the television viewing audience at a rate of 3.3 per hour in major professional sports programming, 3.0 per hour in other professional sports programming, and 0.3 per hour in college sports programming (Grube 1993, 1995; Madden and Grube 1994).

The engaging images and messages in alcohol commercials may add to the perception, among critics, that advertisements contribute to increased drinking and drinking problems. What is engaging about the advertisements? Although no recent research has investigated this question, older content analysis studies of alcohol advertisements show that alcohol ads link drinking with highly valued personal attributes, such as sociability, elegance, and physical attractiveness, as well as with desirable outcomes, such as success, relaxation, romance, and adventure (see, for example, Atkin and Block 1980; Strickland et al. 1982).

Researchers have been particularly interested in the degree to which children and adolescents pay attention to these commercials. In one survey of fifth- and sixth-grade children, 59 percent of the children could correctly identify the brand of beer being promoted from an edited, still photograph taken from a television commercial featuring Spuds McKenzie (Grube 1995). A vast majority of the children (82 percent) in the same survey correctly matched the advertising slogan, "Spuds McKenzie, the original party animal," with Budweiser.

Alcohol advertising with celebrity endorsers, humor, animation, and rock music has been shown to be especially appealing to adolescents (Atkin and Block 1983; Grube 1995). In addition, a study of adolescent boys confirmed that they were particularly attracted to alcohol advertisements depicting sports (Slater et al. 1996*c*, 1997). In one recent study, adolescents perceived that a significant number of alcohol advertisements portray people under 21 years of age (Slater et al. 1996*b*). Other research has indicated, however, that adolescents' identification with the actors in the ads, or their desire to be like the actors, is relatively low (Austin and Meili 1994). Lifestyle- or image-oriented alcohol advertising has been shown to be more appealing to both adults and adolescents than is alcohol advertising that promotes only product quality (Covell et al. 1994).

Besides the frequency of advertisements and their appeal to minors, concerns have also stemmed from advertising content that raises safety questions. One study found that 33 percent of television beer advertisements (16 of 49) contained scenes of people drinking and either driving or engaging in water activities such as swimming or boating (Grube 1995). Moreover, messages to drink safely and moderately (such as "Know when to say when") appear in less than 1 percent of alcohol advertisements and have been criticized for not clearly defining responsible drinking (DeJong et al. 1992).

Does Alcohol Advertising Affect Drinking or Drinking Problems?

Earlier reviews have concluded that the effects of alcohol advertising on people's drinking beliefs and behaviors are limited, at best (Atkin 1995; Calfee and Scheraga 1994; Fisher 1993; Smart 1988). More recent research has not markedly changed this conclusion.

The two key questions that frame most of the current studies are whether alcohol advertising (1) increases overall drinking and drinking problems in the population or (2) increases drinking among children and adolescents or favorably predisposes them toward alcohol. A third important question about the possible effects of alcohol advertising on minority populations, who have been targets of advertising for particular alcohol products, has received little or no quantitative research to date and therefore is not covered in this review.

In the descriptions below, alcohol advertising research is grouped into four types of studies: experimental studies, econometric studies, survey research, and media literacy interventions.

Experimental Studies

Experimental studies have investigated how short-term exposure to alcohol advertising affects people's drinking beliefs and behaviors under controlled conditions. Typically, a group of participants is exposed to one or more alcohol advertisements embedded in a television program, among a series of neutral advertisements, or, in the case of print advertising, in a booklet or magazine. The investigators then compare the experimental group's beliefs or behaviors related to drinking with those of a control group that views the same items without the embedded alcohol advertisements. The results of earlier experimental studies have been mixed, with some studies finding no effects (Kohn et al. 1984; Sobell et al. 1986) and others finding small or short-term effects for some study participants (Kohn and Smart 1984).

A later study applied this approach to examine the effects of television beer advertising on the drinking beliefs of young people who were not regular drinkers (Lipsitz et al. 1993). The researcher showed three groups of fifth- and eighth-grade students videotapes containing 40 television commercials. One group saw videotapes containing 5 beer commercials scattered among 35 other commercials. Another group saw videotapes with the same five beer commercials plus two antidrinking public service announcements (PSA's). The control group saw videotapes with five soft-drink commercials in place of the beer commercials. The remaining 35 commercials were the same for all groups and advertised a variety of products, such as foods and automobiles.

After viewing the videotapes, the children completed a memory task that showed they attended to the advertisements and remembered seeing the beer and soft-drink commercials. Then they completed an "alcohol expectancy" questionnaire that measured the extent to which they believed drinking would lead to a number of desirable outcomes, such as enhancing social behavior or promoting relaxation. Neither exposure to the beer advertisements nor to the antidrinking PSA's affected the children's expectancies about the outcomes of drinking.

More recently, an experimental study examined young people's responses to variations in the placement of alcohol advertisements. The researchers exposed a sample of 244 high school students to videotaped television beer advertisements embedded in either a sports program or an entertainment program (Slater et al. 1997). The researchers asked the students to complete a questionnaire that measured their reactions after viewing each advertisement. The research team also asked the students about their present alcohol use and their future drinking intentions.

The responses were split along gender lines. The female students responded more negatively to the beer advertisements and offered more counterarguments than did the male students, particularly when the programs they watched had sports content.

In addition, adolescents of Anglo-American descent who responded favorably toward the beer advertisements were more likely to report current drinking and future intentions to drink. This finding might be interpreted as suggesting that alcohol advertising increases drinking predisposition. The effects were relatively small, however, and the finding did not hold for Latino students. Moreover, the design of this study did not allow the researchers to determine whether a favorable orientation toward alcohol advertisements predisposed the young people to drinking, or whether being predisposed to drinking made the young people more favorable toward alcohol advertisements. Nevertheless, the Latino-Anglo difference is an interesting finding. Although the Latino students liked the advertisements, they may have seen them as less personally relevant. Factors such as identification or perceived similarity with actors in television advertisements may influence the relationship between a person's attitude toward alcohol advertisements and his or her beliefs and behaviors related to drinking.

Experimental Studies: Methodological Considerations. Overall, the results of these experimental studies offer only limited support, at best, for effects of alcohol advertising on drinking beliefs and intentions (Atkin 1995; Grube and Wallack 1994; Lastovicka 1995; Thorson 1995). Although laboratory experimental studies can control for extraneous factors and can allow for strong causal inferences, they often lack realism. In a typical study, respondents are exposed to alcohol advertising in an artificial setting such as a schoolroom. The stimulus advertisements are often embedded among a very large number of "neutral" advertisements shown one after another. This style of presentation does not reflect the natural situation in which viewers are usually exposed to advertising. As a result, it is difficult to draw conclusions about the "real world" effects of alcohol advertising on beliefs and behaviors on the basis of these laboratory studies.

Furthermore, advertisers target specific audiences with particular advertisements (Thorson 1995). If the stimulus advertisements do not contain images, themes, or music that appeal to the participants in a specific study, it is less likely that any effects will be observed. In most cases, including the study described previously involving third and fifth graders (Lipsitz et al. 1993), the stimulus advertisements are not described in enough detail to ascertain if they were appropriate for the experimental participants. Additionally, these laboratory experiments can only address the effects of short-term exposure to a limited number of alcohol advertisements. The relevance of such studies for understanding the cumulative effects of exposure to hundreds or thousands of alcohol advertisements over many years is questionable. This research paradigm may be most relevant to understanding which ads appeal to viewers and whether or not exposure to alcohol advertising elicits immediate and short-term increases in consumption among those already favorably predisposed to drinking (Kohn and Smart 1984).

Econometric Studies

A number of studies have applied the theoretical and statistical techniques of economic research to analyze issues relating to alcoholic beverage advertising. Generally these econometric studies have focused on the relationship between the advertising expenditures of the alcohol industry and the average amount of alcohol consumed per person (per capita consumption) or the amount of alcohol sales, with price and other factors taken into account. A few studies have investigated whether alcohol advertising affects rates of traffic fatalities and other alcohol-related problems such as liver cirrhosis.

Overall, the econometric studies conducted to date provide little consistent support for a relationship between alcohol advertising and alcohol consumption and related problems. They do provide indirect support, however, for the hypothesis that alcohol advertising leads to changes in brand or beverage preferences without increasing total consumption. To follow is a summary of recent studies as well as criticisms related to methodological issues.

The Question of Consumption. The overall conclusion from econometric studies conducted prior to 1990 is that alcohol advertising exerts a negligible effect on overall alcohol consumption (for reviews, see Calfee and Scheraga 1994; Fisher 1993; Saffer 1995*a*,*b*, 1996). These early studies suggest that a 1-percent decrease in alcohol advertising would be associated, at most, with a 0.1-percent decrease in consumption (Godfrey 1994).

Since then, two econometric studies have departed from the previous findings in that they reported substantive and statistically significant effects of alcohol advertising on alcohol-related problems (Saffer 1991, 1997). The first of these studies reported that countries with restrictions on broadcast alcohol advertisements had lower rates of both alcohol consumption and traffic fatalities (Saffer 1991, 1993*b*). Using data from 17 European and North American countries for the years 1970 through 1983, the researcher determined that countries with partial restrictions on television alcohol advertising, such as prohibitions on commercials for liquor, had 16-percent lower alcohol consumption rates and 10-percent lower motor vehicle fatality rates than did countries with no restrictions. In turn, countries with complete bans on television alcohol advertisements had 11-percent lower consumption rates and 23-percent lower motor vehicle fatalities rates than did countries with partial restrictions.

Controversy about these findings arose with the publication of a reanalysis (Young 1993) that criticized the original study (Saffer 1991) on a number of grounds. The reanalysis indicated that countries with low rates of alcohol problems were more likely to adopt bans on alcohol advertising because of preexisting, conservative drinking styles and attitudes. The reanalysis also suggested that partial alcohol advertising bans might actually *increase* alcohol consumption, a counterintuitive outcome. Questions about these findings, in turn, were raised by the author of the original study, who reported that the reanalysis suffered from methodological flaws that rendered the results inconsistent (Saffer 1993*b*).

More recently, another study reported significant advertising effects on drinking problems (Saffer 1997). The study has a number of methodological strengths and, although it cannot establish causation, it offers the strongest econometric evidence to date that alcohol advertising might influence drinking problems. The researcher looked at the relationship between motor vehicle fatalities and variations in local alcohol advertising in the top 75 media markets in the United States from 1986 through 1989. Alcohol advertising was represented as the sum of industry expenditures for producing and broadcasting television, radio, and outdoor advertisements, weighted for their relative impact based on the estimated number of people exposed to each.

After accounting for regional price differences and population variables such as income and religion, the researcher found that increases in alcohol advertising were significantly related to increases in total and nighttime vehicle fatalities. The effects appeared to be greater for older drivers than younger drivers (18 through 20 years old). On the basis of these analyses, the researcher estimated that a total ban on alcohol advertising might reduce motor vehicle fatalities by as much as 5,000 to 10,000 lives per year.

A separate analysis examined how variations in prices paid by the alcohol industry for advertising might influence rates of motor vehicle fatalities. The researcher found that higher advertising prices were associated with lower fatality rates, apparently because higher prices reduced the amount of advertising and consequently the rate of alcohol consumption. These results indicated that eliminating the advertising tax credit for the alcohol industry would reduce motor vehicle fatalities by as many as 1,300 lives per year (Saffer 1997).

The divergence of the findings of this study from some earlier econometric studies may, in part, be a result of improvements in methodology. Investigating local variations in advertising and adjusting for the relative impact of different media types are two important innovations that have not been duplicated in other econometric

studies. Nonetheless, establishing a cause-and-effect relationship based on this study is problematic. Even though important background and demographic variables were controlled, the possibility that the observed relationship between alcohol advertising and motor vehicle fatalities resulted from some third variable, such as social norms, cannot at this point be discounted.

Reallocating Market Shares. All of the remaining recent econometric studies produced primarily negative findings, and they support earlier conclusions that alcohol advertising has little or no effect on overall consumption levels.

In the most thorough econometric investigation of alcohol advertising to date, researchers used U.S. data from 1970 through 1990 to analyze changes in per capita consumption as a function of changes in advertising. In addition, they looked for "cross-sectional associations," or links between consumption and advertising at specific, narrow time frames over the two decades (Fisher and Cook 1995).

Considering the cross-sectional links first, the researchers found that increased alcohol industry expenditures for magazine advertisements were associated with increased liquor consumption. This finding is consistent with the fact that liquor advertising in the United States occurs primarily in magazines. Although alcohol consumption dropped overall during the two decades, the researchers found that the years with higher total wine and liquor advertising (across all media) also had higher relative consumption levels not only for wine and liquor, but also for beer, and thus, total alcohol. Interestingly, increases in total beer advertising were associated with decreased liquor consumption, as would be expected if market shares were being shifted. These cross-sectional findings provided some support for the effects of advertising on alcohol consumption.

When the researchers analyzed the data using method that accounted for changes over time rather than a static, cross-sectional model, however, there was no evidence that changes in advertising were related to changes in consumption. The reanalysis did indicate that increased advertising of spirits was linked to a drop in the market share for wine. Overall, the findings of this study provide little or no evidence that alcohol advertising increases overall alcohol consumption, although they suggest that such advertising may realign market share.

Other studies have taken different paths to arrive at similar conclusions. One team used four different estimation procedures on annual U.S. data from 1964 through 1990 to investigate the effects of "real"(that is, inflation-adjusted) advertising expenditures for beer, wine, and spirits on the consumption of these beverages (Nelson and Moran 1995). The researchers examined "same-beverage effects," such as the effects of beer advertising expenditures on beer consumption, as well as "cross-beverage effects," such as the effects of beer advertising expenditures on wine consumption. They found that alcohol advertising expenditures were unrelated to total alcohol consumption once the researchers accounted for differences in price, population, income, and age and for advertising for all other goods. Their results also supported the claim that advertising reallocates market shares among brands and, to a lesser degree, beverage types.

Another study examined the effects of brand-level advertising on spirits consumed in the United States from 1976 through 1989 (Gius 1996). Advertising for a given brand of spirits was positively related to consumption of that "own brand" of spirits, whereas rival-brand advertising was not significantly related to own-brand consumption. This pattern was interpreted as indicating that alcohol advertising does not change overall consumption of spirits but rather leads simply to a reallocation of market shares.

It is not clear, however, that this conclusion necessarily follows from the pattern of findings. If own-brand advertising *increases* own-brand consumption but does not significantly *reduce* rival-brand consumption, then it might be having an overall market effect of increasing total

consumption of spirits. This is a concern especially because successful advertising campaigns may elicit extensive counteradvertising by rival brands. Additional research would be needed to bear this theory out, as well as to investigate whether such campaigns build brand loyalty among underage drinkers that is then associated with underage consumption.

An additional study investigated the effects of advertising on alcohol and tobacco consumption in selected States for the years 1959 through 1982 (Goel and Morey 1995). The researchers found mixed results for the effects of advertising on consumption. Some of their findings showed that either the current or the previous year's advertisements for alcohol appeared to *decrease* consumption. As a possible explanation for this counterintuitive finding, the authors suggested that advertising might induce brand switching without increasing overall demand, which may force firms to advertise more to maintain their market shares. Other studies support the proposition that advertising may be a function of sales, as well as sales a function of advertising (Saffer 1995*b*, 1996). The models used in this study (Goel and Morey 1995), and in most econometric studies of alcohol advertising conducted to date, do not capture these potential reciprocal effects.

Econometric Studies: Methodological Considerations. Econometric studies on alcohol advertising have been criticized on a number of grounds (Calfee and Scheraga 1994; Fisher 1993; Saffer 1995*a*,*b*). One recurring limitation is that the studies tend to combine, or aggregate, the advertising data across the different media types, which prevents researchers from detecting the effects of individual media types. In a related issue, the use of data that are aggregated at the yearly level may hide the short-term effects of "pulsed" advertising campaigns that have peaks and valleys in the concentration of advertisements over the year (Saffer 1995*a*). It has also been argued that econometric studies have not taken into consideration the possible cumulative effects of advertising over many years; as a result, they could underestimate advertising effects (Saffer 1995*a*).

Another important caution in interpreting these studies concerns conclusions about cause and effect. Some of the studies have relied on cross-sectional analyses, which take a "snapshot" of the status of many variables at specific, narrow points in time. With this method, even if significant links were to be found between advertising and other variables, it is not possible to draw strong conclusions about cause-and-effect relationships. Although researchers strive to adjust the data for the key factors that might cloud the findings, an apparent relationship between two variables may actually be due to a third, omitted variable in the model. Moreover, the causal direction may be the opposite of that assumed.

Finally, another limitation of the existing econometric studies is that they have focused on per capita consumption, problems, or sales rather than on individuals. As a result, interpretations of results from these studies are susceptible to the "ecological fallacy," that is, erroneously drawing conclusions about individuals on the basis of aggregated data. Thus, the finding that alcohol advertising has no *aggregate* effect on consumption does not mean that there is no effect for any *individual*. Not enough is known about how alcohol advertising might affect specific populations that may be more susceptible or more exposed to the advertising. In particular, it has been argued that young people may be especially influenced by alcohol advertisements (Atkin 1993) and that minority populations have been specially targeted by alcohol advertising (Abramson 1992; Scott et al. 1992). In addition, studies have yet to explore whether advertising has a greater impact on individuals during the initiation or early stages of drinking behavior than after drinking patterns have been established.

Survey Studies

For the most part, survey studies of alcohol advertising have focused on children and adolescents. Many of the early survey studies found significant, positive relationships between exposure to or awareness of alcohol advertising and drinking beliefs and behaviors among young

people (Aitken et al. 1988; Atkin and Block 1980; Atkin et al. 1983, 1984). These effects were small, however, and a few studies found no significant relationships (Adlaf and Kohn 1989; Strickland 1982, 1983).

More recent studies using survey or questionnaire methods, described below, have continued to find significant, though still small, associations between alcohol advertisements and drinking beliefs and behaviors. Almost all of the studies are cross-sectional snapshots of the study groups, however, so they can show associations between variables but cannot confirm cause-and-effect relationships.

Awareness of Alcohol Advertising. One relatively large study looked into connections between children's awareness of alcohol advertising and their knowledge and beliefs about drinking (Grube 1995; Grube and Wallack 1994). In this study, based on a random sample of 468 fifth and sixth graders, the researchers ascertained the students' awareness of alcohol advertising by presenting the students with a series of still photographs taken from television commercials for beer. In each case, all references to product or brand were blocked. The researchers asked the children if they had seen each advertisement and, if so, to identify the product being advertised.

The investigators found that the children who were more aware of advertising had increased knowledge of beer brands and slogans as well as more positive beliefs about drinking. In addition, those with higher levels of awareness of alcohol advertising were slightly more likely to say that they intended to drink as an adult.

The positive links between awareness of advertising, knowledge of beer brands and slogans, and beliefs about drinking were maintained even though the researchers accounted statistically for the possibility that prior beliefs and knowledge could affect the children's awareness of the advertising. The researchers thus suggested that awareness of alcohol advertising predisposes young people to drink, rather than the other way around. The investigators were careful to note, however, that longitudinal studies, which track changes in a group over time, would be necessary to establish the causal nature of the relationship with more certainty.

One study of 677 New Zealand teenagers represented an advance in methodology in that it used a longitudinal design that tracked a random sample of teens over several years (Connolly et al. 1994). One finding was that young men who, at age 15, could recall more alcohol commercials (mostly beer advertisements) drank greater quantities of beer when they turned 18 than did those who could recall fewer commercials at age 15. Conversely, the women who could recall more alcohol advertising at age 15 reported drinking less at age 18 than those who could recall fewer at age 15. Despite the longitudinal approach, the study is problematic for a number of reasons. Most important, it did not account for drinking status or predispositions to drinking at the earlier stages of the study. Thus, it is unclear whether attention to alcohol advertising increased drinking among the young men or whether those who were predisposed to drink paid more attention to the alcohol advertising. Moreover, the fact that recall of advertising was related to decreased drinking in the young women further obscures the interpretation of this study.

Like It or Not: Feelings About Alcohol Advertising. A number of studies have attempted to find out whether children and adolescents who like alcohol advertisements have different drinking beliefs and behaviors than those who do not like the advertisements. In one study of 213 children aged 7 through 12, the more the children liked alcohol advertisements, the more likely they were to have experimented with alcohol (Austin and Nach-Ferguson 1995). Although this effect was relatively robust, the study sample was not selected at random, which limits the ability to generalize about the findings. In a similar study with 154 at-risk preadolescents, the researchers found that the more the children identified with the content of the alcohol commercials, the more likely they were to have positive expectations regarding drinking (Austin and Meili 1994).

In a more recent study of 500 New Zealand children aged 10 through 17, researchers found that the degree to which the children liked a set of beer advertisements influenced how much they expected to drink at age 20 (Wyllie et al. 1998*a*). The researchers showed each child a written description of three television beer commercials as well as a still photograph from each. The children were then asked how often they had seen each advertisement and how much they liked each of them. The results showed that the more the children liked the ads, the higher their expected frequency of drinking at age 20. Liking the advertisements had a relatively large effect on their intentions to drink, but the effect was more modest on current drinking behaviors and only marginally significant. Moreover, the researchers concluded from a statistical analysis that, while liking alcohol advertising influences current drinking status and intentions, the reverse does not seem to be true.

In a similar study of an older age group, the same research group reported stronger results in 1,012 randomly selected 18- to 29-year-olds from New Zealand (Wyllie et al. 1998*b*). In this case, the more the respondents liked the alcohol advertisements, the more likely they were to drink at greater rates and to agree with positive belief statements such as "Drinking is a good way to escape from the hassles of everyday life." Most important, the more they liked the advertisements, the more they reported drinking problems such as getting into a physical fight because of drinking. As with the study just mentioned, the researchers applied a statistical model to conclude that alcohol advertising and responses to alcohol advertising influence drinking beliefs, behaviors, and problems rather than the other way around.

Survey Studies: Methodological Considerations. Although survey studies consistently find significant associations between alcohol advertising and drinking beliefs and behaviors, these relationships tend to be modest. Moreover, a number of these studies have used small and nonrepresentative samples, which raises questions about the ability to generalize the findings to the population at large. In addition, as mentioned previously, because of the cross-sectional designs of most of these studies, as well as the failure to control for previous drinking in the single longitudinal study, conclusions cannot be drawn about causality.

Media Literacy Interventions

Many school-based education programs involve "media literacy" or "resistance to social influence" curricula designed to increase students' ability to think analytically about advertising, including to some extent alcohol advertising (Botvin et al. 1990; Ellickson and Bell 1990; Ellickson et al. 1993; Hansen et al. 1988; MacKinnon et al. 1991). Unfortunately, media literacy or resistance training is most often embedded in curricula with multiple components, and very few evaluations have considered their independent effects. As a result, studies of these broad programs shed little light on the specific effects of teaching young people about the effects of alcohol advertising on drinking beliefs or behaviors.

Recently, a few studies have focused exclusively on providing media literacy education to children and adolescents as a means of countering the potential effects of alcohol advertising. These studies are important for two reasons. First, they may provide evidence about the effectiveness of such interventions for preventing or delaying drinking by children and adolescents. Second, they also may provide indirect evidence about whether or not alcohol advertising affects young people. If such countermeasures lead to socially desirable changes in drinking beliefs or behaviors, it may be implied that alcohol advertising does, in fact, influence young people.

One research team has performed two controlled studies looking at the results of providing general or alcohol-specific media literacy education to young children (Austin and Johnson 1997*a*,*b*). For the first study, which involved 225 third graders, they divided the sample into three groups. One group viewed a "general media education" video designed to promote skepticism toward advertising (Austin and Johnson 1997*a*). This group critiqued sample advertisements taped from network television about food and nonalcoholic drinks. A second group viewed

an "alcohol-specific media education video" and critiqued advertisements for beer and soft drinks. A third group saw neither video and served as a control group.

Afterwards, to obtain a measure of "predrinking" behaviors in these young children, the researchers had the children choose various toys and other products that included equivalent alcohol- and non-alcohol-related pairs. For example, two toys looked like a soft drink or a beer can that danced when switched on. For each pair, the children chose their favorite product. In addition, the children responded to a series of questions about their understanding of the persuasive intent of advertising, their perceptions of advertising realism, their perceptions of the actors in the advertisements, and their expectancies about the desirability of drinking. The researchers collected two sets of this data: one immediately after the intervention, and another 3 months later.

The intervention had both immediate and delayed effects. In the immediate posttest, the children who had received media literacy education showed a decrease in their desire to be like the actors portrayed in advertisements and viewed these actors as less similar to them and as less desirable. They also showed a decrease in their expectations about the positive effects of drinking and were less likely to choose alcohol-related products and toys. These intervention effects were maintained at the 3-month posttest. The analyses also indicated that the alcohol-specific intervention was more effective on these measures than the general media literacy intervention was, and that the interventions influenced girls more than it did boys (Austin and Johnson 1997*a*). In the second study by this team, the researchers followed the same procedures with 246 third graders and their results generally paralleled those of the previous study (Austin and Johnson 1997*b*).

In another study, researchers asked 83 adolescents, aged 12 through 18, about the last time that they were in an alcohol education class, if at all, and to recall the amount of discussion concerning alcohol advertisements that took place in that class (Slater et al. 1996*a*). The research team found that students with prior exposure to alcohol education classes who recalled discussions of alcohol advertising were more likely to offer counterarguments to beer advertisements. After the researchers accounted for the effects of gender, age, and race/ethnicity, two factors—how recently the alcohol education had taken place and the extent to which alcohol advertising had been discussed—emerged as independent predictors of the likelihood of counterarguing. The researchers concluded that exposure to alcohol-specific media literacy education may increase resistance to alcohol advertising months or even years later.

Media Literacy Studies: Methodological Considerations. Although the two experimental studies with third graders just described (Austin and Johnson 1997*a*,*b*) suggest positive effects of alcohol-specific media literacy training, they are limited in important ways. Most notable, the results were somewhat inconsistent between experimental groups and at different measurement periods. In addition, the ability to generalize the results to a broad population is limited because both studies used "convenience samples," which, as the name suggests, were readily available to the researchers but not representative of the population at large. Finally, because the follow-up period was only 3 months, the effects of these childhood interventions on initiation of drinking or drinking frequency in later adolescence are unknown. This is particularly important because the relationship between expectations about drinking and later rates of actual drinking has not been delineated.

The value of the study of adolescents (Slater et al. 1996*a*) is also limited because it used a small, nonrandom sample, and because the relationship between the alcohol education variables and drinking behaviors was not considered. In addition, it is possible that the young people who were less predisposed to drink paid more attention in the alcohol education class and thus were more likely to recall the media literacy component.

Overall, these studies of alcohol-specific media literacy education suggest that such interventions may increase young people's resistance to alcohol advertising and may affect alcohol beliefs and behaviors. Unfortunately, they have yet to investigate effects on actual drinking. Further research with larger and more representative samples, longer follow-up periods, and more inclusive measures of drinking is necessary to establish the effectiveness of media literacy education.

In Closing

When all of the studies are considered, the results of research on the effects of alcohol advertising are mixed and not conclusive.

Overall, experimental studies have produced little consistent evidence that alcohol advertising affects drinking beliefs and behaviors. These studies address short-term exposure to a limited number of alcohol advertisements. The number of advertisements that respondents view in such studies is small compared with ongoing exposure in the natural environment. By their nature, these studies provide little insight into the cumulative effects of exposure to alcohol advertising over many years and may be incapable of producing measurable effects against the background of alcohol advertising occurring in the real world.

Experimental studies are most important for understanding audience reactions to different types of advertisements or for investigating immediate effects, such as an increased interest in use of alcohol that may result from short-term exposure to alcohol advertisements. Large-scale field experiments that block alcohol advertising from reaching selected communities or households could provide stronger evidence regarding the effects of alcohol advertising (Atkin 1995). Such studies are yet to be undertaken, however, and it would be difficult to eliminate all print, outdoor, and national alcohol advertising for such a study.

Similarly, and with a few exceptions (such as Saffer 1997), recent econometric research using aggregated market data provides very little consistent evidence that alcohol advertising influences per capita alcohol consumption, sales, or problems. The bulk of this research supports the claim that alcohol advertising reallocates consumption among brands or beverage types. Interpretation of these studies is limited, however, by difficulties in drawing causal inferences based on the data and analytic methods, aggregation of advertising data across media types, failure to account for reciprocal effects between advertising and sales or consumption, and exclusion of the effects of "pulsed" advertising and the cumulative effects of advertising (Saffer 1995*a*,*b*).

Despite the limitations of any individual studies, however, the overall conclusion drawn from current econometric research is that alcohol advertising has little, if any, effect on total levels of alcohol consumption and related problems. This conclusion is consistent with earlier reviews of this literature (Calfee and Scheraga 1994; Fisher 1993; Smart 1988).

In contrast to experimental and econometric studies, survey research on alcohol advertising and young people consistently indicates small but significant connections between exposure to and awareness of alcohol advertising and drinking beliefs and behaviors. Children and adolescents who view, or are made aware of, alcohol advertisements hold more favorable beliefs about drinking, intend to drink more frequently as adults, and are more likely to be drinkers than are other young people. They also have greater knowledge of alcohol brands and slogans.

Although these effects on young people are small, they may be important. The small effects may reflect the fact that individual differences in exposure to advertising are relatively slight given the high frequency of advertising in the environment (Saffer 1995*b*). Because the environment is saturated with alcohol advertising, most people are exposed to many advertisements each year, with very little variation in individual exposure. In addition, as the number of exposures increases over time, the incremental impact of each single, additional advertisement

diminishes. That is, the incremental effect of any single advertisement is greater if, for example, it is only the tenth advertisement to which a person has been exposed as opposed to the hundredth advertisement, which, in turn, would have a greater impact than the thousandth. These considerations suggest that research on the effects of alcohol advertising should include studies of young children who have had little exposure to it and for whom the greatest impact can be expected.

Taken as a whole, the survey studies provide some evidence that alcohol advertising may influence drinking beliefs and behaviors among children and adolescents. This evidence, however, is far from conclusive. The cross-sectional design of most of the published studies limits the ability to establish cause-and-effect relationships. Although alcohol advertising may predispose young people to drink, the reverse may be true instead. That is, young people who look favorably on drinking may seek information about alcohol and thus be more attentive to alcohol advertisements. Although longitudinal or sequential studies that track samples of young people from childhood to late adolescence would be particularly useful in investigating these possibilities, no such studies have been published that adequately control for past drinking behaviors and predisposition.

Further research, particularly longitudinal studies addressing at-risk populations such as children and targeted minorities, is necessary before firm conclusions can be reached about the effects of alcohol advertising.

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